

## ENHANCING PRE-READING INTEREST THROUGH THE SMART FLOOR EDUCATIONAL PLAY TOOL IN EARLY CHILDHOOD EDUCATION

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### Abstract

Early reading interest in young children often decreases when literacy activities rely on teacher-centered instruction and repetitive worksheets. This study aimed to improve the pre-reading interest and skills of children aged 5–6 years through the use of the Smart Floor educational play tool. The study addresses the need for innovative, play-based literacy instruction that is developmentally appropriate and actively engages young children in early reading experiences. The study used classroom action research with two cycles, consisting of planning, action, observation, and reflection. The participants were 23 children in Group B.1 at PAUD Baitul 'Ulum Cianjur. Data were collected through observation, interviews, checklists, and documentation, then analyzed using descriptive qualitative analysis and percentage calculation. The findings showed a gradual improvement in children's pre-reading achievement. The average pre-reading score increased from 56% in the pre-cycle to 73% in Cycle I and reached 85% in Cycle II, exceeding the predetermined success criterion. Children became more active, focused, confident, and enthusiastic in recognizing uppercase letters, lowercase letters, letter sounds, letter forms, and simple words. The most notable improvement occurred in phonics recognition, which increased from 52% to 90%, indicating substantial progress in children's ability to associate letters with their corresponding sounds. The study concludes that Smart Floor can create an active, enjoyable, and meaningful literacy environment. This media supports children's early literacy development through movement, symbols, sound recognition, and direct interaction. The novelty of this study lies in integrating movement-based educational play with structured pre-reading instruction through a cyclical classroom action research approach. The findings contribute to the growing body of literature on play-based literacy learning and provide practical guidance for teachers seeking child-centered strategies to support early literacy development in early childhood education settings.

**Keywords:** *Early Literacy; Play-Based Learning; Classroom Action; Child Engagement; Phonics Recognition*

## INTRODUCTION

Early childhood literacy is a fundamental foundation for language development, reading readiness, and later academic success. Literacy in young children includes not only reading and writing skills but also listening, speaking, understanding symbols, and early critical thinking abilities (Syafe'i, 2025). At the age of 5–6 years, pre-reading skills become an important indicator of readiness for formal schooling. If these skills are not properly developed, children may experience difficulties in

recognizing letters, connecting sounds with symbols, and developing interest in reading activities. Therefore, early literacy learning should be introduced through meaningful, interactive, and developmentally appropriate experiences that match children's characteristics and needs.

Pre-reading problems are still found among Group B children at PAUD Baitul 'Ulum. Current learning practices tend to be teacher-centered, causing children to be less active, less exploratory, and less engaged in meaningful literacy experiences. This condition indicates that classroom learning has not fully supported active participation and experiential learning for young children. In contrast, early childhood education should emphasize play-based learning that encourages exploration and interaction. Research shows that play-based learning can improve literacy skills and motivation compared to conventional approaches focused on memorization and structured tasks (Azizah, 2025). It also supports language development through social interaction and symbolic understanding (Cheruiyot, 2024).

From an Islamic perspective, literacy is emphasized in the first revelation of Surah Al-'Alaq verses 1–5, which commands humans to read and develop knowledge. Surah Al-Qalam verse 1 also highlights the importance of the pen as a symbol of learning and knowledge acquisition. These teachings provide a strong spiritual foundation for developing early literacy skills as part of holistic child development. These values align with the Early Childhood Learning Outcomes in the Merdeka Curriculum and STPPA in Ministerial Regulation No. 137 of 2014, which emphasize symbol recognition, sound-letter relationships, and reading interest. Thus, literacy development integrates cognitive, linguistic, and spiritual dimensions in early childhood education.

One alternative solution to address these challenges is the use of the Smart Floor Educational Game Tool. Smart Floor is an interactive play-based learning medium designed in the form of a playmat that enables children to learn through movement, visual stimulation, symbols, and direct interaction. This learning media provides opportunities for children to actively engage in physical and cognitive activities simultaneously, making learning more meaningful and enjoyable. Interactive and contextual media have been proven to improve children's literacy engagement and performance compared to traditional methods (Novitasari, 2025). Therefore, Smart Floor is considered suitable for supporting early literacy development in pre-reading skills.

However, empirical studies focusing on the application of Smart Floor in improving pre-reading skills in early childhood education remain limited, especially in local kindergarten contexts such as PAUD Baitul 'Ulum. This gap indicates the need for further research to examine its effectiveness in real classroom settings. Therefore, this study aims to describe the implementation of the Smart Floor Educational Game Tool in pre-reading learning for children aged 5–6 years and to analyze its impact on children's interest in pre-reading activities. The novelty of this study lies in integrating interactive play-based media into structured pre-reading learning to enhance early literacy development.

## METHODS

This study employed a Classroom Action Research (CAR) design with a descriptive approach (Utomo et al., 2024). Classroom Action Research was selected because the study aimed to improve teaching practices directly through planned, implemented, observed, and continuously reflected actions (Ade Rahayu & Arna Saskia, 2025). CAR is characterized as reflective, collaborative, and cyclical, as it is conducted through the stages of planning, action, observation, and reflection to enhance the quality of learning (Mulyasa, 2020). The action model used in this study was based on Kurt Lewin's model, which consists of four main stages: planning, action, observation, and reflection (Lewin, 1946). This model was selected because it provides a systematic framework for implementing continuous instructional improvements and evaluating learning outcomes through cyclical reflection. These stages were implemented sequentially in cycles. If the results of reflection in one cycle did not meet the predetermined success indicators, the intervention was continued in the subsequent cycle with improvements based on the previous evaluation results (Tampubolon, 2014).

The study was conducted at PAUD Baitul 'Ulum, Cianjur District, involving Group B.1 children aged 5–6 years. The research was carried out from April to June 2026. The participants consisted of 23 children. Group B.1 was selected based on preliminary observations indicating that the children's pre-reading interest had not yet developed optimally. Children aged 5–6 years are at a critical stage of early literacy development because they begin to recognize symbols, letter sounds, vocabulary, and develop an interest in reading activities as a foundation for primary school readiness (Snow et al., 1998). Supporting informants in this study included the Group B.1 teacher and the principal of PAUD Baitul 'Ulum. The teacher was selected due to direct involvement in classroom instruction, while the principal was included because of knowledge regarding school policies and institutional support for the implementation of educational play tools.

The research data consisted of primary and secondary data. Primary data were obtained directly through observations of children's activities during learning sessions using the Smart Floor Educational Play Tool, interviews with teachers and the principal, and documentation of classroom activities. Primary data refer to information collected directly from the original source through observation, interviews, or documentation according to the research objectives (Naamy, 2019). Secondary data were collected from supporting documents, including teaching modules or Daily Lesson Plans (RPPH), teacher observation sheets, daily developmental records, pre-reading assessment results prior to the intervention, and other relevant institutional documents. The use of multiple data sources enabled data triangulation and strengthened the credibility of the research findings.

The research implementation began with a pre-cycle phase to identify the initial condition of children's pre-reading interest. Subsequently, the intervention was conducted through two action

cycles. Each cycle consisted of planning, action implementation, observation, and reflection stages. During the planning stage, the researcher prepared lesson plans, determined learning outcomes and instructional objectives, developed the Smart Floor media, and designed observation instruments. During the action stage, the teacher and researcher implemented pre-reading instruction through play-based activities using the Smart Floor. The activities focused on letter-symbol recognition, letter-sound correspondence, children's participation in literacy games, and children's responses to pre-reading activities. During the observation stage, the researcher and assisting teacher observed children's activities using observation sheets. During the reflection stage, observation and documentation data were analyzed to evaluate the effectiveness of the intervention and determine necessary improvements for the next cycle. Two cycles were considered sufficient because the intervention achieved the predetermined success indicators and demonstrated measurable improvement in children's pre-reading interest.

Data collection techniques included observation, interviews, documentation, and analysis of instructional documents. Observation was used to assess children's participation, attention, enthusiasm, confidence in engaging with activities, ability to recognize letter symbols, and responses while using the Smart Floor. Observation is considered essential because it captures spontaneous behaviors and authentic learning situations (Nasution, 2023; Wada et al., 2024). Interviews were conducted with the teacher and principal to gather information regarding children's initial conditions, instructional processes, challenges in implementing the media, and changes in pre-reading interest following the intervention. Interviews enabled the researcher to obtain in-depth information through direct interaction with participants (Fadila, 2025). Documentation was used to strengthen observation and interview findings through photographs of activities, children's developmental records, assessment sheets, and instructional documents (Arikunto, 2018; Sugiyono, 2019). The combination of these techniques allowed the researcher to obtain comprehensive information regarding both the learning process and learning outcomes.

The primary research instrument was an observation sheet measuring children's pre-reading interest, developed based on indicators of early literacy development. The observed indicators included children's attention to pre-reading activities, participation in Smart Floor games, interest in letter symbols, ability to follow letter- or sound-based instructions, and confidence in identifying or naming letter symbols. These indicators were derived from early literacy theories emphasizing children's engagement with print, symbol recognition, phonological awareness, and active participation in literacy-related activities. Assessment was conducted using early childhood developmental categories: Not Yet Developed (NYD), Beginning to Develop (BD), Developed as Expected (DAE), and Very Well Developed (VWD). In addition to the observation sheet, the study utilized interview guides, field notes, photographic documentation, and RPPH or teaching modules as supporting instruments.

Data were analyzed using both qualitative descriptive analysis and percentage analysis. Qualitative descriptive analysis followed the procedures proposed by Miles and Huberman (1984), including data reduction, data display, conclusion drawing, and verification. Data reduction involved selecting information relevant to the research focus. Data display was presented in the form of narratives, tables, and observation summaries. Conclusions were drawn by examining patterns of improvement in children's pre-reading interest from the pre-cycle through Cycle I and Cycle II. Data analysis in Classroom Action Research was conducted continuously from the initial observation stage until the completion of the intervention (Wiriadmadja, 2007). To enhance trustworthiness, the analysis process involved collaborative discussions between the researcher and classroom teacher during the reflection stage of each cycle.

Quantitative analysis was used to calculate the percentage achievement of pre-reading interest indicators. The formula applied was:

$$P = R / SM \times 100\%$$

Where "P" represents the percentage score, \*R\* represents the total score obtained, and \*SM\* represents the maximum possible score. The resulting percentages were classified into four categories: poor (<70%), fair (70–79%), good (80–89%), and very good (90–100%) (Rohmani, 2019).

The success indicator of the intervention was determined based on the improvement of children's pre-reading interest from the pre-cycle to subsequent cycles. The intervention was considered successful when at least 75%–80% of the children achieved the categories of Developed as Expected (DAE) or Very Well Developed (VWD). This criterion is consistent with Mulyasa (2013), who stated that the success of Classroom Action Research can be determined when the majority of learners achieve the targeted developmental indicators. In addition, success was evaluated through improvements in the quality of the learning process, including increased participation, enthusiasm, confidence, and engagement in pre-reading activities using the Smart Floor Educational Play Tool. These indicators were aligned with the study objective of enhancing children's pre-reading interest through interactive and play-based literacy experiences.

## **RESULTS AND DISCUSSION**

### **RESULT**

This study was conducted at PAUD Baitul 'Ulum, Cianjur, involving Group B.1 consisting of 23 children aged 5–6 years. PAUD Baitul 'Ulum is an early childhood education institution located in a densely populated community and is committed to developing a generation characterized by good morals, independence, intelligence, and creativity. The context of this institution is highly relevant to the present study because literacy instruction in Group B.1 still required strengthening, particularly in the area of early literacy and pre-reading interest. Preliminary observations indicated that many

children demonstrated limited engagement during literacy activities, suggesting the need for more interactive and child-centered instructional approaches.

Initial conditions were identified through classroom observations, interviews with the classroom teacher, checklist assessments, and documentation. The pre-cycle findings revealed that several children were not actively engaged in letter-recognition activities. Children tended to lose focus easily when learning activities were delivered through conventional instructional approaches. The teacher also reported that letter-sound recognition (phonics) required more intensive stimulation because some children were not yet able to accurately associate letter symbols with their corresponding sounds. These findings confirmed the necessity of implementing an intervention capable of increasing both literacy engagement and pre-reading performance among children.

The intervention was implemented through two action cycles using the Smart Floor Educational Play Tool. In Cycle I, learning activities were conducted under the theme of land transportation. Children were introduced to letters, phonics, and simple words through stepping, pointing, naming, and arranging letters on the Smart Floor media. Observation results indicated that children became more enthusiastic, active, and interested in participating in pre-reading activities. However, several children still required additional support in recognizing uppercase letters and phonetic sounds. Although improvements were observed, the reflection results suggested that further modifications were necessary to optimize children's participation and literacy development.

Reflection on Cycle I highlighted the need for improvements in Cycle II. Adjustments included reorganizing the media to provide greater movement space for children, incorporating activities involving missing-letter completion, and dividing children into smaller groups. In Cycle II, learning activities were implemented using the Beyond Centers and Circle Time (BCCT) approach with more varied activities. Children were asked to select and sort vehicle pictures, jump onto letters corresponding to phonetic sounds, identify the initial letters of words, and arrange letters into simple words such as car and motorcycle. These modifications created a more engaging learning environment and allowed children to participate more actively in literacy-based play experiences.

Table 1. Summary of Learning Activities Using the Smart Floor Educational Play Tool

| Stage     | Activity Focus                                                                       | Main Findings                                                                                   | Follow-Up Action                                                       |
|-----------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Pre-Cycle | Initial observation of pre-reading skills                                            | Children lacked focus and were less active during conventional instruction                      | Smart Floor was selected as the intervention medium                    |
| Cycle I   | Introduction to letters, phonics, and simple words through Smart Floor activities    | Children became more enthusiastic, but some still struggled with uppercase letters and phonics  | Enhancement of media use, activity variation, and small-group learning |
| Cycle II  | Reinforcement of phonics, uppercase and lowercase letters, and simple word formation | Children became more active, focused, confident, and capable of participating in literacy games | Intervention terminated because success indicators were achieved       |

As shown in Table 1, the implementation of Smart Floor activities resulted in progressive improvements in children's participation, confidence, and responsiveness throughout the intervention process. The learning activities evolved from simple letter recognition tasks to more complex literacy games involving phonics and word formation.

Descriptive statistical analysis was conducted by calculating the percentage achievement for each pre-reading skill indicator. The observed indicators included the ability to recognize and name uppercase letters, recognize and name lowercase letters, identify letter sounds (phonics), distinguish between uppercase and lowercase letters, and associate letter sounds with simple words.

Table 2. Children's Pre-Reading Skill Achievement in the Pre-Cycle, Cycle I, and Cycle II

| <b>Pre-Reading Skill Indicator</b>             | <b>Pre-Cycle</b> | <b>Category</b> | <b>Cycle I</b> | <b>Category</b> | <b>Cycle II</b> | <b>Category</b> | <b>Improvement from Pre-Cycle to Cycle II</b> |
|------------------------------------------------|------------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------------------------------------|
| Recognizing and naming uppercase letters       | 48%              | Poor            | 64%            | Poor            | 84%             | Good            | 36%                                           |
| Recognizing and naming lowercase letters       | 55%              | Poor            | 74%            | Fair            | 77%             | Good            | 22%                                           |
| Recognizing letter sounds (phonics)            | 52%              | Poor            | 71%            | Fair            | 90%             | Very Good       | 38%                                           |
| Distinguishing uppercase and lowercase letters | 65%              | Poor            | 75%            | Fair            | 86%             | Good            | 21%                                           |
| Associating letter sounds with simple words    | 59%              | Poor            | 82%            | Good            | 86%             | Good            | 27%                                           |
| Average                                        | 56%              | Poor            | 73%            | Fair            | 85%             | Good            | 29%                                           |

As shown in Table 2, all pre-reading skill indicators demonstrated improvement from the pre-cycle to Cycle II. The most substantial improvement occurred in phonics recognition, which increased from 52% to 90%, indicating that movement-based learning activities effectively supported children's understanding of letter-sound relationships. Similarly, significant gains were observed in uppercase letter recognition, simple word association, and letter discrimination skills. These findings indicate that the Smart Floor Educational Play Tool effectively enhanced children's pre-reading performance in a gradual and systematic manner.

By the end of the intervention, the average achievement score had increased from 56% in the pre-cycle to 85% in Cycle II, representing an overall improvement of 29 percentage points. This increase exceeded the predetermined success criterion requiring at least 75%–80% of children to

achieve the categories of Developed as Expected or Very Well Developed. Furthermore, classroom observations revealed improvements not only in literacy skills but also in children's confidence, participation, enthusiasm, and willingness to engage in literacy-related activities. Therefore, the intervention implemented in Cycle II was considered successful, and no additional cycle was required.

The findings suggest that the Smart Floor Educational Play Tool provides meaningful and engaging learning experiences that support early literacy development. Through movement-based and play-oriented activities, children actively interacted with letters, sounds, and words, making the learning process more enjoyable and effective. These results are consistent with previous studies indicating that play-based learning environments can significantly enhance children's literacy engagement, motivation, and early reading skills. The integration of physical movement, visual stimuli, and collaborative interaction within the Smart Floor activities contributed to increased attention, confidence, and participation among children, ultimately leading to improvements in their pre-reading abilities. Overall, the findings demonstrate that Smart Floor serves as an effective instructional medium for fostering both children's pre-reading interest and foundational literacy skills in early childhood education settings.

## **DISCUSSION**

The findings of this study indicate that the implementation of the Smart Floor Educational Play Tool (APE Smart Floor) successfully improved the pre-reading interest and skills of children aged 5–6 years. This improvement occurred because the Smart Floor provided an active, concrete, and developmentally appropriate learning experience for young children. Through the Smart Floor activities, children were not merely exposed to letters visually; they were also encouraged to move, point, jump, pronounce letter sounds, and arrange letters into simple words. These activities made pre-reading instruction more meaningful than conventional approaches that rely primarily on teacher explanations and worksheet-based activities. The findings suggest that meaningful literacy learning emerges when children are actively involved in constructing knowledge through direct interaction with learning materials rather than passively receiving information from teachers.

These findings are consistent with the perspective of Syafei et al. (2025), who argued that early childhood literacy extends beyond reading and writing to include listening, speaking, understanding symbols, and processing information. In the present study, the Smart Floor facilitated the development of several aspects of early literacy through activities involving letter recognition, phonemic awareness, letter–sound correspondence, and verbal interaction with teachers and peers. Such experiences contributed to a richer literacy environment that supported children's emerging literacy skills. The findings therefore reinforce the view that literacy development is a multidimensional process requiring integrated cognitive, linguistic, and social experiences during early childhood.

The increased engagement observed among children also aligns with the findings of Azizah (2025), who reported that play-based learning enhances children's literacy interest and achievement more effectively than conventional instructional approaches. During the implementation of the Smart Floor activities, children demonstrated high levels of enthusiasm when identifying letters, jumping onto designated letter symbols, and constructing simple words. These observations suggest that educational games create enjoyable learning experiences while reducing boredom often associated with traditional pre-reading instruction. The increased enthusiasm observed throughout the intervention indicates that children's motivation to participate in literacy activities can be significantly enhanced when learning is presented in an enjoyable and meaningful format.

Furthermore, the results support the findings of Cheruiyot (2024), who emphasized that play-based learning promotes children's participation in activities that support language and early literacy development. The Smart Floor provided opportunities for children to learn through movement, interaction, and exploration. As a result, children became actively engaged physically, cognitively, and socially. Rather than serving as passive recipients of information, children actively constructed learning experiences through direct participation and exploration. This active engagement may explain why improvements were observed across all pre-reading indicators, particularly in phonics recognition and letter-sound association skills.

From the perspective of instructional media, the findings are consistent with Novitasari et al. (2025), who concluded that contextual and interactive learning media can improve children's literacy interest and performance more effectively than monotonous traditional methods. The Smart Floor incorporates interactive elements by combining visual stimuli, physical movement, symbolic representation, and game-based activities. This multisensory approach enabled children to understand the relationships among letters, sounds, and simple words through direct and meaningful experiences. The effectiveness of the Smart Floor may therefore be attributed to its ability to simultaneously stimulate multiple sensory modalities, which supports deeper learning and retention among young children.

Theoretically, the use of the Smart Floor is also supported by Hughes's (2002) Locomotor Play Theory. Locomotor play emphasizes movement-based activities such as walking, jumping, changing positions, and exploring space. In this study, children engaged in physical movement while searching for letters, jumping onto target letters, and pronouncing letter sounds according to instructions. Such bodily involvement helped sustain children's attention and increased their motivation to learn. This finding is particularly important because young children tend to learn more effectively through direct experiences and physical engagement rather than through extended verbal instruction. The findings therefore provide empirical support for the application of locomotor play principles in early literacy instruction.

One of the major strengths of this study lies in the cyclical implementation of Classroom Action Research. The improvements observed from Cycle I to Cycle II demonstrate how reflective practice contributed to enhancing instructional quality. Modifications in media arrangement, the use of small-group activities, and the introduction of more varied games enabled children to remain focused and participate more effectively in pre-reading activities. Moreover, the use of clearly defined indicators allowed improvements in children's abilities to be monitored and measured systematically. These findings highlight the importance of continuous reflection and instructional adaptation in achieving optimal learning outcomes for young children.

The novelty of this study lies in the integration of Smart Floor as a movement-based educational play tool specifically designed to enhance pre-reading skills through the combination of phonics instruction, letter recognition, and active play experiences. While previous studies have emphasized play-based learning or literacy development separately, this study demonstrates how both components can be integrated into a structured literacy intervention for children aged 5–6 years. This contribution enriches the literature on innovative literacy instruction in early childhood education settings.

Despite these positive findings, several limitations should be acknowledged. First, the quantitative data were analyzed using descriptive percentages only and did not involve inferential statistical testing. Second, children's interest was primarily measured through behavioral observations, including enthusiasm, attention, confidence, and participation, rather than through a specialized interest measurement scale. Third, the study was conducted in a single classroom within one early childhood education institution; therefore, the findings may not be generalizable to other settings with different characteristics. These limitations suggest that future studies should involve larger samples, multiple educational settings, and more diverse assessment instruments to strengthen the generalizability of the findings.

Nevertheless, this study provides important practical implications for early childhood education. The Smart Floor can serve as an alternative instructional medium for pre-reading activities that is engaging, enjoyable, and developmentally appropriate. Beyond helping children recognize letters and sounds, the media fosters learning motivation through concrete and meaningful play experiences. Therefore, the implementation of the Smart Floor Educational Play Tool may contribute to shifting instructional practices from teacher-centered approaches toward more child-centered learning environments that actively support early literacy development. For teachers and educational institutions, these findings emphasize the importance of integrating interactive and movement-based learning media into literacy instruction to create more effective and engaging learning experiences for young children.

## **CONCLUSION**

This study demonstrates that the implementation of the Smart Floor Educational Play Tool effectively improved the pre-reading interest and skills of children aged 5–6 years at PAUD Baitul

'Ulum, Cianjur. Improvement was evident in the average pre-reading achievement scores, which were initially categorized as poor during the pre-cycle, increased during Cycle I, and reached the good category by Cycle II. Children became more active, focused, enthusiastic, and confident in recognizing uppercase and lowercase letters, identifying letter sounds, distinguishing letter forms, and associating letter sounds with simple words. These findings indicate that pre-reading instruction becomes more effective when children are actively engaged in meaningful, movement-based, and enjoyable play activities. The results also confirm that integrating physical movement and literacy experiences can enhance children's motivation and readiness for early reading development.

The novelty of this study lies in the use of the Smart Floor as a movement-based educational play medium designed to stimulate young children's interest in pre-reading activities. The Smart Floor functions not only as a visual learning aid but also as an interactive learning environment that integrates movement, symbols, sounds, collaboration, and concrete experiences. The originality of this research is reflected in the application of the Smart Floor within early childhood pre-reading instruction through cyclical classroom action research tailored to children's developmental needs. Therefore, this study offers an innovative contribution by introducing a more active and child-centered approach to early literacy instruction. Unlike conventional literacy activities that primarily rely on worksheets and teacher explanations, the Smart Floor provides opportunities for children to learn through direct participation, exploration, and play-based interaction.

From a scholarly perspective, this study contributes to the field of Early Childhood Education, particularly in the utilization of educational play tools to support early literacy development. The findings reinforce the understanding that young children learn most effectively through direct experiences, play, physical movement, and social interaction. Practically, teachers may use the Smart Floor as an alternative instructional medium that is simple, engaging, and adaptable to various learning themes. For early childhood education institutions, the results provide a foundation for developing more creative instructional practices that move beyond reliance on teacher-centered instruction and worksheet-based activities. The findings also strengthen theoretical perspectives emphasizing that literacy development in early childhood should be supported through active, multisensory, and developmentally appropriate learning experiences.

The impact of this study may also extend to schools and the broader community. Within educational settings, the Smart Floor can help create a more child-friendly, active, and enjoyable learning environment. For parents and community members, the findings highlight that reading readiness should not be developed through rigid and repetitive drills but can instead be fostered through purposeful and developmentally appropriate play. In terms of learning culture, this study encourages a shift from teacher-centered instruction toward approaches that provide children with opportunities to explore, experiment, move, ask questions, and actively construct knowledge. From an

economic perspective, media such as the Smart Floor represent a relatively low-cost learning resource that can be independently developed and adapted by teachers or educational institutions. Consequently, the use of the Smart Floor Educational Play Tool offers significant potential for improving the quality of pre-reading instruction and supporting children's readiness for subsequent levels of education. Future research is recommended to involve larger samples, different educational settings, and more diverse assessment methods to further examine the effectiveness of Smart Floor-based learning in supporting early literacy development across broader contexts.

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